REMARKS

In response to the Office Action mailed October 10, 2001, Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments. As a result of the amendments and cancellations listed above, Claims 1-17 are canceled, Claims 19, 20 and 23 and line 27 on page 4 of the specification have been amended, and Claims 24-40 are added by this paper and are presented for further Examination. Applicants representative wishes to thank the Examiner for the courteous telephonic conference conducted on December 4, 2001.

The specific changes to the specification and the amended claims are shown on a separate set of pages attached hereto and entitled **VERSION WITH MARKINGS TO SHOW CHANGES MADE**, which follows the signature page of this Amendment. On this set of pages, the insertions are underlined while the ~~deletions are stricken through~~.

1. Rejections Under 35 U.S.C. § 112

In the above-mentioned office action the Examiner argued that several claims failed to particularly point out and distinctly claim the subject matter of the invention. Applicant has canceled Claims 1-17 and amended Claims 19, 20 and 23 to use terms having correct antecedent basis and respectfully submits that the claims as amended meet the requirements of 35 U.S.C. § 112.

The Examiner also noted that "[I]n Claim 8, line 2, 'their leading edge' is vague and indefinite." New Claim 31 has been drafted to indicate that the modulated signals are aligned along a leading edge of the modulated signals, thus obviating this rejection. Applicant thereby submits that Claim 31 particularly and clearly points out the subject matter of the invention as required by 35 U.S.C. § 112. For all of the above reasons, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 112.

2. Rejections Under 35 U.S.C. § 102

The Examiner rejected Claims 1, 3, 4, 6, 9 and 10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,725,956 to Jenkins ("Jenkins"). The Examiner noted that Jenkins discloses a control system for a remote-controlled aircraft with a receiver, a control module in communication with the receiver to send out modified signals to a control flight

system. The Examiner also stated that the control module is a microprocessor/microcontroller inherently containing memory such as RAM and that it is well known in today's computer technology for such memory to store instructions. Furthermore, the Examiner noted that the control flight system of Jenkins has a servo, a rudder, an elevator, etc. Finally, the Examiner stated that, with respect to Claim 6, a straight and level flight path is a desired pattern that one skilled in the art could have implemented on the aircraft so that the aircraft can fly to a desired point without causing danger to the aircraft.

To be anticipatory under 35 U.S.C. § 102, a reference must teach each and every element of the claimed invention. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379 (Fed. Cir. 1986). "Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. ...There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991).

Jenkins discloses a system for controlling an aircraft from a ground station via a voice interface for the user. Telemetry is measured by the aircraft and transmitted by the autopilot system to the ground station for display on the ground station instrumentation. These telemetry signals are not used to control the movement of the aircraft. User-provided control signals from the pilot are also transmitted from the pilot's transmitter to the aircraft in order to control the aircraft flight control systems.

Independent Claims 24 and 34 relate to control systems in remotely controlled aircraft. These control systems having a control module that receives control signals from the pilot and positioning signals from a positioning module. The control module is adapted to output modified control signals to the flight control systems of the remote-controlled aircraft based on the received control signals and received positioning signals. Thus, there is a communication link between the positioning signals describing the attitude of the aircraft and the control module which adapts its output signals based on the attitude of the aircraft. This allows the control module to modify the control signals received from the pilot to save the aircraft from entering an undesirable flight position.

There is no teaching in Jenkins to use the telemetry data received in the aircraft to control the signals transmitted to the flight control systems. Hence, Applicant respectfully submits that

Claims 24 and 34 are not anticipated by Jenkins. Moreover, dependent Claims 25-33 and 35-40 would also not be anticipated by Jenkins. For these reasons, Applicant respectfully requests withdrawal of all rejections under 35 U.S.C. § 102.

2. Rejections Under 35 U.S.C. § 103

In the above-mentioned office action, the Examiner rejected Claims 2, 7, 8, 11-14, 16-21, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Jenkins in view of U.S. Patent No. 4,206,411 to Meyer ("Meyer"). The Examiner noted that Jenkins disclosed all parts of the invention except pulse-width modulated signals and the modified guidance signals that result in the aircraft entering a predetermined flight pattern in case of an emergency. The Examiner also noted that Meyer disclosed, "pulse-width modulated signals and modified guidance signals to change the flight pattern of the aircraft to a predetermined flight pattern in case of emergency or any other situations." The Examiner concluded that, "[i]t would have been obvious to one skilled in the art at the time the invention was made to have used pulse-width modulated signals and a computerized system in which modified guidance signals... change the flight pattern of the aircraft to a predetermined flight pattern in case of an emergency... to prevent the aircraft from crashing."

To establish a *prima facie* case of obviousness a three-prong test must be met. First, there must be some suggestion or motivation, either in the references or in the knowledge generally available among those of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success found in the prior art. Third, the prior art reference must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

Meyer discloses a system in a remotely controlled aircraft for responding to a loss of control signal from the remote control transmitter. The on-board control system measures characteristics of the flight control signals sent from the transmitter and when those characteristics fall out of a predetermined range, the control system replaces them with preprogrammed control signals to put the aircraft in a safe flight pattern.

As discussed above, independent Claims 24 and 34 relate to control systems in remotely controlled aircraft that a control module that receives control signals from the pilot and positioning signals from a positioning module. The control module is adapted to output

modified control signals to the flight control systems of the remote-controlled aircraft based on the received control signals and received positioning signals. Thus, there is a communication link between the positioning signals describing the attitude of the aircraft and the control module which adapts its output signals based on the attitude of the aircraft. This allows the control module to modify the control signals received from the pilot to save the aircraft from entering an undesirable flight position.

There is no teaching of a control module that is adapted to output modified control signals to the flight control systems of the remote-controlled aircraft based on the received control signals and received positioning signals. Jenkins' system merely sends telemetry data to a flight instrumentation on the ground, while Meyer describes a system that switches between pilot control and automated control when the aircraft stops receiving control signals.

Since neither Meyer nor Jenkins teach this limitation of the Claims, their combination would not render the claims obvious. Moreover, neither reference provides a motivation or suggestion to allow the on-board flight control module to utilize telemetry signals to modify the control signals that are sent to the aircraft flight control systems. Therefore, Applicant respectfully submits that Claims 24-40 are patentable under 35 U.S.C. § 103(a), and respectfully requests withdrawal of the rejections of these claims for obviousness.

For a similar reason, Claims 18-23 are not obvious in view of Jenkins and Meyer. Claim 18 recites a method for a remotely controlled aircraft to modify its flight path. The method involves the steps of reading positioning signals corresponding to the attitude of said aircraft from a positioning module; determining if said control signals will place the airplane outside of defined performance parameters; and modifying the control signals so that performance of said airplane is within said defined performance parameters. As discussed above, neither Jenkins nor Meyer describe a system that reads positioning signals corresponding to the attitude of the aircraft, and then uses those signals to modify the control signals sent to the flight control systems of the aircraft. Because such a teaching is missing from both references, their combination would not make Claim 18 obvious to one of ordinary skill in the art. For this reason, Applicant respectfully requests withdrawal of the rejection of Claims 18-23 under 35 U.S.C. § 103(a).

The Examiner also rejected dependent Claims 5, 15 and 22 under 35 U.S.C. § 103(a) over Jenkins in view of U.S. Patent No. 4,821,572 ("Hulsing"), or in view of Jenkins, Meyer and Hulsing.

Hulsing discloses a multi axis accelerometer that measures acceleration in various axes. The Examiner noted that it would have been obvious to one skilled in the art at the time of the invention to have used Hulsing's accelerometer in Jenkin's system "to allow the aircraft to determine its own acceleration."

Applicant respectfully submits that for all of the reasons cited above, dependent Claims 5, 15 and 22 would not be obvious since Jenkins does not teach a system that provides a control module adapted to output modified control signals to the aircraft flight control systems based on the received control signals and received positioning signals. Thus, the combination of Jenkins and Hulsing, or Jenkins, Meyer and Hulsing would not make these claims obvious to one of ordinary skill in the art. For this reason, Applicant respectfully requests withdrawal of this rejection.

CONCLUSION

The Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, amendments to the claims for patentability purposes pursuant to statutory sections 102, 103 and 112, the reasons therefore, and arguments in support of the patentability of the pending claim set are presented above. Any claim amendments which are not specifically discussed in the above remarks are not made for patentability purposes, and it is believed that the claims would satisfy the statutory requirements for patentability without the entry of such amendments. Rather, these amendments have only been made to increase claim readability, to improve grammar, and to reduce the time and effort required of those in the art to clearly understand the scope of the claim language.

In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested. If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully requested to initiate the same with the undersigned.

[redacted]

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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: 09 Jan 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Please amend the paragraph starting at line 27 of page 4 to the following:

"The preset flight mode might include specific patterns, such as a "f[F]igure 8", loop or spin. Thus, the pilot could enter aerobatic or complicated flight movements into a memory in the flight control system so that these movements could be repeated over and over without risk of error."

IN THE CLAIMS

19. (Amended) The method of Claim 18, wherein modifying said [guidance] control signals comprises modifying said [guidance] control signals so that said aircraft begins a straight and level flight.

20. (Amended) The method of Claim 18, wherein modifying said [guidance] control signals comprises modifying said [guidance] control signals so that said airplane does not turn with an angle of greater than a preset number of degrees.

23. (Amended) The method of Claim 20, wherein said [guidance] control signals comprise pulsewidth modified signals.